

Serial Number: 09/549848A

ENTERED

- Changed a file from non-ASCII to ASCII
- Changed the margins in cases where the sequence text was "wrapped" down to the next line.
- Edited a format error in the Current Application Data section, specifically:
- Edited the Current Application Data section with the actual current number. The number inputted by the applicant was the prior application data; or other _____
- Added the mandatory heading and subheadings for "Current Application Data".
- Edited the "Number of Sequences" field. The applicant spelled out a number instead of using an integer.
- Changed the spelling of a mandatory field (the headings or subheadings), specifically:
- Corrected the SEQ ID NO when obviously incorrect. The sequence numbers that were edited were:
- Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited:
- Corrected subheading placement. All responses must be on the same line as each subheading. If the applicant placed a response below the subheading, this was moved to its appropriate place.
- Inserted colons after headings/subheadings. Headings edited included:
- Deleted extra, invalid, headings used by an applicant, specifically:
- Deleted: non-ASCII "garbage" at the beginning/end of files; secretary initials/initials of _____ file;
 page numbers throughout text; other invalid text, such as _____
- Inserted mandatory headings, specifically: *Seq 90 - inserted C2127 and response*
- Corrected an obvious error in the response, specifically:
- Edited identifiers where upper case is used but lower case is required, or vice versa.
- Corrected an error in the Number of Sequences field, specifically:
- A "Hard Page Break" code was inserted by the applicant. All occurrences had to be deleted.
- Deleted *ending* stop codon in amino acid sequences and adjusted the "(A)Length:" field accordingly (error due to a PatentIn bug). Sequences corrected: _____
- Other:

Examiner: The above corrections must be communicated to the applicant in the first Office Action. DO NOT send a copy of this form.

A. NELSON

1638

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/549,848A

DATE: 11/27/2000
 TIME: 17:38:06

Input Set : A:\17133US2.txt
 Output Set: N:\CRF3\11272000\I549848A.raw

```

4 <110> APPLICANT: Lassner, Michael
5   Post-Beitzenmiller, Dusty
6   Savidge, Beth
7   Weiss, James
9 <120> TITLE OF INVENTION: Nucleic Acid Sequences Involved in
10 Tocopherol Synthesis
12 <130> FILE REFERENCE: 17133/02/US
14 <140> CURRENT APPLICATION NUMBER: 09/549,848A
15 <141> CURRENT FILING DATE: 2000-04-14
17 <150> PRIOR APPLICATION NUMBER: 60/129,899
18 <151> PRIOR FILING DATE: 1999-04-15
20 <150> PRIOR APPLICATION NUMBER: 60/146,461
21 <151> PRIOR FILING DATE: 1999-07-30
23 <160> NUMBER OF SEQ ID NOS: 94
25 <170> SOFTWARE: FastSEQ for Windows Version 4.0
27 <210> SEQ ID NO: 1
28 <211> LENGTH: 1182
29 <212> TYPE: DNA
30 <213> ORGANISM: Arabidopsis sp
32 <400> SEQUENCE: 1
33 atggaggctc tgctctctat ttcttcgtt gttccgctg ctgggtgggtt ttgttggaaag 60
34 aagcagaatc taaagctcca ctctttatca gaaatccgag ttctgcgttg tgatccgagt 120
35 aaagttgtcg caaaaccgaa gtttaggaac aatcttggta ggcgtatgg tcaaggatct 180
36 tcatttgttgc tgatccaa acataagtgc agattttcggtt taaatggccac tgcgggtca 240
37 cctgaggctt tcgactcgaa tagcaaacag aagtcttttta gagactcggtt agatccgttt 300
38 tacaggttt ctaggccatca tacagttattt ggcacagtgc tttagcatttt atctgtatct 360
39 ttcttagcag tagagaatgt ttctgtatata tctcccttac ttttcaactgg catctggag 420
40 gctgttgtc cagctctcatc gtatccatc tacatagtttgc ggctaaatca gttgtctgat 480
41 gttgaaatag ataaggtaa caagccctat cttccattgg catcaggaga atattctgtt 540
42 aacacccgca ttgcaatagt agcttccttc tccatcatga gtttctggct tgggtggatt 600
43 gttgggtcat ggcattgtt ctgggtctttt ttttgtgagtt tcatgtcg tactgcatac 660
44 tctatcaattt tgccactttt acgggtggaaa agatttgcattt tggttgcagc aatgtgtatc 720
45 ctcgtgtcc gagcttatattt ttttccaaatc gccttttatac tacatatttgc gacacatgtt 780
46 ttttggaaagac caatcttgcattt cactaggctt cttatatttgc ccactgcgtt tatgagcttt 840
47 ttctctgtcg ttatgtcattt gttttaggtt atacctgtata tcaagggggta taagatattc 900
48 ggaatccgat cattctctgtt aactctgggtt cagaaaacggg tttttggac atgtgttaca 960
49 ctacttcaaa tggcttaacgc tggtycaattt ctatgtggag ccacatcttc attcatatgg 1020
50 agcaaaggtaa tctcggttgtt gggtcatgtt atactcgcaaa caactttgtt ggctcgagct 1080
51 aagtccgttg atctgagtag caaaaccgaa ataaatctcat gttatatgtt catatggaaag 1140
52 ctctttatc cagaglactt gctgttaccc tttttgttgc 1182
54 <210> SEQ ID NO: 2
55 <211> LENGTH: 393
56 <212> TYPE: PRT
57 <213> ORGANISM: Arabidopsis sp
59 <400> SEQUENCE: 2
60 Met Glu Ser Leu Leu Ser Ser Ser Ser Leu Val Ser Ala Ala Gly Gly
61 1           5           10          15

```

Does Not Comply
 Corrected Diskette Needed

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/549,848A

DATE: 11/27/2000
 TIME: 17:38:06

Input Set : A:\17133US2.txt
 Output Set: N:\CRF3\11272000\I549848A.raw

```

62 Phe Cys Trp Lys Lys Gln Asn Leu Lys Leu His Ser Leu Ser Glu Ile
63      20          25          30
64 Arg Val Leu Arg Cys Asp Ser Ser Lys Val Val Ala Lys Pro Lys Phe
65      35          40          45
66 Arg Asn Asn Leu Val Arg Pro Asp Gly Gln Gly Ser Ser Leu Leu
67      50          55          60
68 Tyr Pro Lys His Lys Ser Arg Phe Arg Val Asn Ala Thr Ala Gly Gln
69 65      70          75          80
70 Pro Glu Ala Phe Asp Ser Asn Ser Lys Gln Lys Ser Phe Arg Asp Ser
71      85          90          95
72 Leu Asp Ala Phe Tyr Arg Phe Ser Arg Pro His Thr Val Ile Gly Thr
73      100         105         110
74 Val Leu Ser Ile Leu Ser Val Ser Phe Leu Ala Val Glu Lys Val Ser
75      115         120         125
76 Asp Ile Ser Pro Leu Leu Phe Thr Gly Ile Leu Glu Ala Val Val Ala
77      130         135         140
78 Ala Leu Met Met Asn Ile Tyr Ile Val Gly Leu Asn Gln Leu Ser Asp
79 145      150         155         160
80 Val Glu Ile Asp Lys Val Asn Lys Pro Tyr Leu Pro Leu Ala Ser Gly
81      165         170         175
82 Glu Tyr Ser Val Asn Thr Gly Ile Ala Ile Val Ala Ser Phe Ser Ile
83      180         185         190
84 Met Ser Phe Trp Leu Gly Trp Ile Val Gly Ser Trp Pro Leu Phe Trp
85      195         200         205
86 Ala Leu Phe Val Ser Phe Met Leu Gly Thr Ala Tyr Ser Ile Asn Leu
87      210         215         220
88 Pro Leu Leu Arg Trp Lys Arg Phe Ala Leu Val Ala Ala Met Cys Ile
89 225      230         235         240
90 Leu Ala Val Arg Ala Ile Ile Val Gln Ile Ala Phe Tyr Leu His Ile
91      245         250         255
92 Gln Thr His Val Phe Gly Arg Pro Ile Leu Phe Thr Arg Pro Leu Ile
93      260         265         270
94 Phe Ala Thr Ala Phe Met Ser Phe Phe Ser Val Val Ile Ala Leu Phe
95      275         280         285
96 Lys Asp Ile Pro Asp Ile Glu Gly Asp Lys Ile Phe Gly Ile Arg Ser
97      290         295         300
98 Phe Ser Val Thr Leu Gly Gln Lys Arg Val Phe Trp Thr Cys Val Thr
99 305      310         315         320
100 Leu Leu Gln Met Ala Tyr Ala Val Ala Ile Leu Val Gly Ala Thr Ser
101      325         330         335
102 Pro Phe Ile Trp Ser Lys Val Ile Ser Val Val Gly His Val Ile Leu
103      340         345         350
104 Ala Thr Thr Leu Trp Ala Arg Ala Lys Ser Val Asp Leu Ser Ser Lys
105      355         360         365
106 Thr Glu Ile Thr Ser Cys Tyr Met Phe Ile Trp Lys Leu Phe Tyr Ala
107      370         375         380
108 Glu Tyr Leu Leu Leu Pro Phe Leu Lys
109 385      390
111 <210> SEQ ID NO: 3

```

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/549,848A

DATE: 11/27/2000
 TIME: 17:38:06

Input Set : A:\17133US2.txt
 Output Set: N:\CRF3\11272000\I549848A.raw

```

112 <211> LENGTH: 1224
113 <212> TYPE: DNA
114 <213> ORGANISM: Arabidopsis sp
116 <400> SEQUENCE: 3
117 atggcgttt ttgggcttc ccgtgttca agacggtgt taaaatcttc cgttccgta      60
118 actccatctt cttectctgc ttctttgcna tcacaacata aatccttgc caatcctgtg    120
119 actaccattt acacaaatcc tttcactaag ttttatectt catggatqa taattaccaa    180
120 qtatggaga aaggaaagaga attgtatcag qagaagtttt ttgggttgg ttggattac     240
121 agatattt gtggatgtc gtcgttctt tcgggtttgg agggaaagcc gaagaagat     300
122 gataaggaga agatgtatgg ttgtgttgg aagaaagatctt ctggataga tttgtattta   360
123 ccagaagaag ttagaggtha tgcttaagctt qctcgatgg ataaaccat ttggacttgg   420
124 ttgcttgctt ggccttqat ttggatggatt qctggcttgc ctgatcctgg aaggccttcca 480
125 agttaaat atatggctt atttgggttgc qgagcattac ttettaggg tgctgggtt     540
126 actataatgg atctgttga tcagacata gatacaagg ttatcgatc aaaactaaga     600
127 cctatcgcca gtgggtttt gacccatctt caagggatgg gatttctgg gctgcagtgg   660
128 cttttagctt tagggatctt ttccttactt aacaatttaca qccgttttgg aggggcttca 720
129 tctttgttac ttgttcttcc ttacccactt atgaagaggt ttacatttttgcctcaaggcc 780
130 tttttagttt tgaccataaa ctggggagca ttgtttaggtt ggactgcagt taaaggaagc 840
131 ataqcacat ctatgtact ccctcttat ctctccggag ctgtgtggac ccttqtttat   900
132 qatactatttt atgcacatca qgacaagaaa gatgtatgtaa aagttgggtt taaatcaaca 960
133 gcccttagat tcggtgatcaa tacaatggctt tggttaactt gatgtggcac aycatccata 1020
134 gggtttcttg cacttctgg attcagtgca gatctcggtt ggcaatatttgcgcattactg 1080
135 gcccgtgcat caggacagtt aggatggcaa ataggacag ctgacttatac atctgggtct 1140
136 gactgcagta gaaaattgtt gtcaacaag ttgtttggctt ctattatatt tagtggagtt 1200
137 qtacttgaa qaagtttca ataa                                         1224
139 <210> SEQ ID NO: 4
140 <211> LENGTH: 407
141 <212> TYPE: PRT
142 <213> ORGANISM: Arabidopsis sp
144 <400> SEQUENCE: 4
145 Met Ala Phe Phe Gly Leu Ser Arg Val Ser Arg Arg Leu Leu Lys Ser
146 1           5           10          15
147 Ser Val Ser Val Thr Pro Ser Ser Ser Ala Leu Leu Gln Ser Gln
148          20          25          30
149 His Lys Ser Leu Ser Asn Pro Val Thr Thr His Tyr Thr Asn Pro Phe
150          35          40          45
151 Thr Lys Cys Tyr Pro Ser Trp Asn Asp Asn Tyr Gln Val Trp Ser Lys
152          50          55          60
153 Gly Arg Glu Leu His Gln Glu Lys Phe Phe Gly Val Gly Trp Asn Tyr
154 65          70          75          80
155 Arg Leu Ile Cys Gly Met Ser Ser Ser Val Leu Glu Gly Lys
156          85          90          95
157 Pro Lys Lys Asp Asp Lys Glu Lys Ser Asp Gly Val Val Val Lys Lys
158          100         105         110
159 Ala Ser Trp Ile Asp Leu Tyr Leu Pro Glu Glu Val Arg Gly Tyr Ala
160          115         120         125
161 Lys Leu Ala Arg Leu Asp Lys Pro Ile Gly Thr Trp Leu Leu Ala Trp
162          130         135         140
163 Pro Cys Met Trp Ser Ile Ala Leu Ala Ala Asp Pro Gly Ser Leu Pro

```

RAW SEQUENCE LISTING DATE: 11/27/2000
 PATENT APPLICATION: US/09/549,848A TIME: 17:38:06

Input Set : A:\17133US2.txt
 Output Set: N:\CRF3\11272000\I549848A.raw

164	145	150	155	160												
165	Ser	Phe	Lys	Tyr	Met	Ala	Leu	Phe	Gly	Cys	Gly	Ala	Leu	Leu	Leu	Arg
166																
167																
168																
169																
170																
171																
172																
173																
174																
175																
176																
177																
178																
179																
180																
181																
182																
183																
184																
185																
186																
187																
188																
189																
190																
191																
192																
193																
194																
195																
196																
197																
198	<210>	SEQ ID NO:	5													
199	<211>	LENGTH:	1296													
200	<212>	TYPE:	DNA													
201	<213>	ORGANISM:	Arabidopsis sp													
202	<214>	SEQUENCE:	5													
203																
204	atgtggcga	aatctgttgt	tttctcggtta	tcttcaggaa	tctctgtttc	tttcttcgtta										60
205	ccaaacccata	gactgattcc	ttggtccccgc	gaatttatgttgc	ccgttaatag	tttcttcggcag										120
206	cctccggctt	cgacgaaatc	aactgtcaatgg	ttagggatca	ctgggtgttag	atctgtatccc										180
207	aatcgaggtt	ttggccactgc	tactgtccgc	gttacagcta	cgttaccac	cggttgatgg										240
208	tcgtcttagat	ttgcgggttt	gggtggatata	gggtatcaact	abgtctgttg	ttatggggat										300
209	ctttctaaatg	ctaaacttag	tatgttttgt	gttgcacat	ctggaaatgg	gtatattctg										360
210	ggtagccggaa	atgtctgtat	tagttcccg	gggttttgtt	acacatgtgc	aggaaaccatg										420
211	atgattgtct	catctgtat	ttccatgtat	cagatgttttgc	tgatgttttgc	tgatgttttgc										480
212	atgaaaatggaa	cgtatgtat	ggcattgtat	tcaggacgtt	ttatgttttgc	acacgttgc										540
213	gcattggcgtt	ctatgtgtgg	tgcttttgttgc	gttttgttgc	ttatgttttgc	ttatgttttgc										600
214	ttggctgttt	gactgtatc	ttccatgtat	gtatgttttgc	ttatgttttgc	ttatgttttgc										660

RAW SEQUENCE LISTING DATE: 11/27/2000
 PATENT APPLICATION: US/09/549,848A TIME: 17:38:06

Input Set : A:\17133US2.txt
 Output Set: N:\CRF3\11272000\I549848A.raw

215	aagcaacttc	accctatcaa	tacutgggtt	ggcgctgtt	tttggctat	cccacccgt	720										
216	cttgggtggg	cggcagcgtc	tggtcagatt	tcatacaatt	cgatgattct	tcacgtct	780										
217	ctttactttt	ggcagatacc	tcattttatg	gccttgcac	atctctgcgc	caatgattat	840										
218	gcacgtgg	tttacaagat	tttgtaactt	tttgcactgt	caaggaaagat	aatagcagca	900										
219	ttggctctaa	ggaactgtt	ttatcatgtt	cttcgcgtt	tcatcgctt	tgactgggg	960										
220	ttaacctcaa	gttgggtttt	ccttgcataa	acacttcata	cacttagcaat	cgctgcaaca	1020										
221	gcattttcat	tatcgcaga	ccggaccatq	cataaaagca	ggaaaatgtt	ccatgcagt	1080										
222	cttcttctcc	ttctgtttt	catgtcttgt	cttccttcac	accgtgtctc	taatgtataat	1140										
223	cagcaacaac	tctgttagaaga	agccggatta	acaaattctg	tatctgttga	agtcaaaact	1200										
224	caaggcggaa	agaaacgtt	ggctcaacct	ccgggtggctt	atgcctctgc	tgccacgttt	1260										
225	cctttctcc	caagcttc	tttcactctt	ccatgt			1296										
227	<210>	SEQ ID NO:	6														
228	<211>	LENGTH:	431														
229	<212>	TYPE:	PRT														
230	<213>	ORGANISM:	Arabidopsis sp														
232	<400>	SEQUENCE:	6														
233	Met	Tyr	Arg	Arg	Ser	Val	Val	Tyr	Arg	Phe	Ser	Ser	Arg	Ile	Ser	Val	
234	1		5			10			15								
235	Ser	Ser	Ser	Leu	Pro	Asn	Pro	Arg	Leu	Ile	Pro	Trp	Ser	Arg	Glu	Leu	
236						20			25					30			
237	Cys	Ala	Val	Asn	Ser	Phe	Ser	Gln	Pro	Pro	Val	Ser	Thr				
238						35			40				45				
239	Ala	Lys	Leu	Gly	Ile	Thr	Gly	Val	Arg	Ser	Asp	Ala	Asn	Arg	Val	Phe	
240						50			55				60				
241	Ala	Thr	Ala	Thr	Ala	Ala	Ala	Thr	Ala	Thr	Thr	Gly	Glu	Ile			
242	65					70			75				80				
243	Ser	Ser	Arg	Val	Ala	Ala	Leu	Ala	Gly	Leu	Gly	His	His	Tyr	Ala	Arg	
244									85			90			95		
245	Cys	Tyr	Trp	Glu	Leu	Ser	Lys	Ala	Lys	Leu	Ser	Met	Leu	Val	Val	Ala	
246									100			105			110		
247	Thr	Ser	Gly	Thr	Gly	Tyr	Ile	Leu	Gly	Thr	Gly	Asn	Ala	Ala	Ile	Ser	
248									115			120			125		
249	Phe	Pro	Gly	Leu	Cys	Tyr	Thr	Cys	Ala	Gly	Thr	Met	Met	Ile	Ala	Ala	
250									130			135			140		
251	Ser	Ala	Asn	Ser	Leu	Asn	Gln	Ile	Phe	Glu	Ile	Ser	Asn	Asp	Ser	Lys	
252									145			150			155		160
253	Met	Lys	Arg	Thr	Met	Leu	Arg	Pro	Leu	Pro	Ser	Gly	Arg	Ile	Ser	Val	
254									165			170			175		
255	Pro	His	Ala	Val	Ala	Trp	Ala	Thr	Ile	Ala	Gly	Ala	Ser	Gly	Ala	Cys	
256									180			185			190		
257	Leu	Leu	Ala	Ser	Lys	Thr	Asn	Met	Leu	Ala	Ala	Gly	Leu	Ala	Ser	Ala	
258									195			200			205		
259	Asn	Leu	Val	Leu	Tyr	Ala	Phe	Val	Tyr	Thr	Pro	Leu	Lys	Gln	Leu	His	
260									210			215			220		
261	Pro	Ile	Asn	Thr	Trp	Val	Gly	Ala	Val	Val	Gly	Ala	Ile	Pro	Pro	Leu	
262									225			230			235		240
263	Leu	Gly	Trp	Ala	Ala	Ala	Ser	Gly	Gln	Ile	Ser	Tyr	Asn	Ser	Met	Ile	
264									245			250			255		
265	Leu	Pro	Ala	Ala	Leu	Tyr	Phe	Trp	Gln	Ile	Pro	His	Phe	Met	Ala	Leu	

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/549,848A

DATE: 11/27/2000
TIME: 17:38:07

Input Set : A:\17133US2.txt
Output Set: N:\CRF3\11272000\I549848A.raw

L:314 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8
L:315 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8
L:679 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:680 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:681 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22
L:760 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25
L:773 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:26
L:790 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:791 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:793 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27
L:1759 M:282 W: Numeric Field Identifier Missing, <212> is required.